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ON A COLLECTION OF SPHECOIDEA SENT BY THE AGRICULTURAL RESEARCH INSTITUTE, PUSA, BIHAR

BY

ROWLAND E. TURNER, F.Z.S., F.E.S

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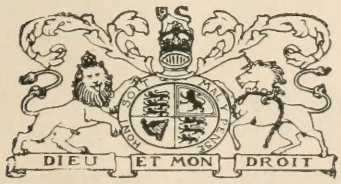

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ON A COLLECTION OF SPHECOIDEA SENT BY THE AGRICULTURAL RESEARCH INSTITUTE, PUSA, BIHAR.

BY

ROWLAND E. TURNER, F.Z.S., F.E.S.

[Received for publication on the 15th March, 1917.]

THE notes in the following paper are taken from a collection forwarded to me for naming by Mr. T. Bainbrigge Fletcher, Imperial Entomologist, and form part of the collection of the Agricultural Research Institute at Pusa. The types of the new species are lodged in the British Museum. The collection is of much interest, showing the presence of a small Palæarctic element as far east as the plains of Bihar, and adding representatives of several genera to the Indian fauna. I have added descriptions of three or four new Indian species in the British Museum Collection.

Neofoxia scutellatus Turn.

Psenulus (?) *scutellatus* Turn. Ann. & Mag. Nat. Hist. (8) X, p. 54, 1912. ♀.

Neofoxia scutellatus Turn. Ann. & Mag. Nat. Hist. 8) XIX, p. 128, 1916.

Hab. Cairns, N. Queensland.

One female from Dacca.

Differs from the type in the yellow margin of the pronotum, in the position of the first recurrent nervure which in the Indian form is interstitial with the first transverse cubital, in the Queensland form just beyond it, and in the slightly lesser constriction of the base of the second dorsal segment. *N. xanthognathus* Rohw. from Luzon is also nearly allied, but is a more slender insect with the median segment much more coarsely sculptured.

Hab. Dacca ; January.

It is remarkable that the Indian form should be nearer to the Queensland than to the Luzon form ; probably it will form a subspecies,

but I consider it better to wait till more material is available before definitely naming it.

Stigmus aterrimus sp. n.

♀. Nigra ; callis humeralibus albidis ; tegulis apice fuscis ; alis hyalinis, iridescentibus, venis nigris.

Long. 6 mm.

♀. Front broad, concave, with a longitudinal carina reaching to the base of the clypeus ; eyes very slightly divergent towards the vertex, separated at the base of the clypeus by a distance about half as great again as the length of the scape. Front subopaque, vertex smooth and shining ; eyes separated from the posterior margin of the head by a distance about equal to their own breadth ; ocelli in an almost equilateral triangle, the posterior pair more than twice as far from the eyes as from each other and about the same distance from the posterior margin of the head. Antennæ very slender, inserted nearer to the eyes than to each other. Pronotum transverse, smooth and shining, the margins raised, the anterior angles pointed ; mesonotum and scutellum smooth and shining, a transverse crenulate groove at the base of the scutellum. Propleuræ irregularly striated ; mesopleuræ shining, with a few scattered punctures. Median segment coarsely longitudinally striated on the basal third ; beyond the striated basal portion is an enclosed triangular space reaching to the apex of the dorsal surface, the enclosed portion transversely striated with a median longitudinal carina ; the sides of the segment obliquely striated ; the apical slope minutely punctured, with a distinct median groove. Petiole as long as the hind femur and trochanter combined. Abdomen shining, sparsely and minutely punctured. Hind tibiæ smooth. Second cubital cell twice as long on the cubitus as on the radius ; stigma nearly three times as long as its greatest breadth ; recurrent nervure received just beyond the middle of the first cubital cell.

Hab. Coonoor, Nilgiri Hills, 5,000 ft., (*G. R. Dutt*), April.

This is very distinct from *cuculus* Nurse in the form of the stigma, the sculpture of the median segment, the longer petiole, the smooth hind tibiæ and the much greater size, also in the colour of the legs, mandibles and antennæ ; from *congruus* Walk. in the same points of colour, and in the sculpture of the median segment, and the greater breadth of the front. I look on *S. niger* Motsch, as a synonym of *congruus*. The head of *congruus* is shorter and more narrowed behind the eyes than in the present species.

Diodontus fletcheri sp. n.

♀. Nigra ; mandibulis, apice excepto, callis humeralibus, tegulis basi, femoribus apice, tibiis anticis, tibiis intermediis et posticis basi, tarsisque flavis ; alis hyalinis, venis fuscis.

Long. 4—5 mm.

♀. Labrum deeply incised at the apex ; clypeus almost transverse on the apical margin, with a row of three well defined teeth. Head finely punctured, more closely on the front than on the vertex ; posterior ocelli as far from each other as from the eyes and further from the posterior margin of the head than from each other. Thorax very finely punctured ; propleuræ with two strong carinæ ; upper portion of the mesopleuræ very coarsely reticulate. Dorsal surface of the median segment strongly longitudinally striated, the striæ diverging towards the apex ; the sides of the segment closely striated ; the apical slope indistinctly reticulate, with a distinct median groove. Abdomen shining, closely microscopically punctured. Hind tibiæ strongly, intermediate less strongly spined, the apical joints of the tarsi more or less infuscate. Second recurrent nervure received just beyond the middle of the second cubital cell, the space between the first transverse cubital nervure and the second recurrent nervure nearly twice as great as the length of the second abscissa of the radius.

Hab. Ootacamund, 7,500 ft., (*T. Bainbrigge Fletcher*), December.

This appears to be very near *D. reticulatus* Cam. from Deesa, which I have not seen, but Cameron makes no mention of the teeth on the clypeus, and there are also colour differences. The sculpture, however, appears to be very similar. Cameron in his descriptions of Indian *Diodontus* seems to mistake the labrum, when not concealed by the mandibles, for the clypeus.

Dolichurus gilberti Turn.

Dolichurus gilberti Turn. Ann. & Mag. Nat. Hist. (8) X, p. 365, 1912. ♀♂

Hab. Khasi Hills, 5,000 ft., (*Turner*), May ; Lebong, 5,000 ft., (*Lefroy*), June. Mr. Lefroy took the female preying on small *Blattidæ*, showing that the habits are similar to those of *Ampulex*.

Dolichurus taprobanæ Sm.

Dolichurus taprobanæ Sm. Trans. Ent. Soc. London, p. 304, 1869. ♀.

Hab. Pusa, (*G. R. Dutt*), December.

Apparently ranges over the whole of India.

Sceliphron deforme Sm.

Pelopœus deformis Sm. Cat. Hym. B. M. IV, p. 231, 1856.

Pelopœus curvatus Sm. Trans. Zool. Soc. London VII, p. 187, 1870.

Sceliphron lineatipes Cam. Ann. & Mag. Nat. Hist. (7) V, p. 36, 1900.

Bingham treats Smith's names as synonyms of *formosum* Sm., which is Australian, but I consider that *deforme* must stand, at least as a subspecies.

Sceliphron pictum Sm.

Pelopœus pictus Sm. Cat. Hym. B. M. IV, p. 231, 1856. ♂.

Hab. Lahore, (*G. R. Dutt*), April to July ; Taru, Peshawar, (*T. Bainbrigge Fletcher*), May ; Pusa, Bihar,* (*G. R. Dutt*), May. Also in the British Museum from Manora ; Karachi, (*F. W. Townsend*), May ; Fao, S. Persia, (*D. Cumming*) ; Muscat, Arabia, (*A. S. G. Jayakar*).

This species always has the scutellum yellow and the greater part of the median segment also yellow. I formerly followed Bingham in regarding this as a highly coloured variety of *S. bilineatum* Sm., but a close examination of the type of *bilineatum* inclines me to regard that species as merely a variety of *madraspatanum* Fab., in which the median segment is usually entirely black, whilst in the type of *bilineatum* there is a short longitudinal fascia on each side and a spot near the apex. Mr. Fletcher informs me that the mud nests of *pictum* and *madraspatanum* differ in shape.

Sceliphron madraspatanum Fabr.

Sphex maderospatana Fabr. Spec. Insect, p. 446, 1781.

Sceliphron madraspatanum Klug. Neu Schr. Ges. naturf. Fr. Berlin III, p. 565, 1801.

Pelopœus madraspatanus Fabr. Syst. Piez, p. 203, 1804.

Pelopœus separatus Sm. Ann. & Mag. Nat. Hist. (2) IX, p. 47, 1852.

Sceliphron kohli Sickm. Zool. Jahrb. VIII, p. 218, 1894.

Var. *Pelopœus bilineatus* Sm. Ann. & Mag. Nat. Hist. (2) IX, p. 47, 1852.

The abdomen of the type of *bilineatum*, and also of that of *separatum*, is very distinctly aciculate, but other specimens of *madraspatanum* show this

* There is apparently an error in the citation of the locality Pusa. Nests were brought to Pusa from Lahore by Mr. G. R. Dutt and wasps emerged from these nests at Pusa and were probably wrongly labelled " Pusa." T. B. F.

character in a varying degree, though it is abnormal in the species. I am inclined to consider that the character shows in stylopized specimens only. Bingham (Fauna British India, Hymen., I, p. 239) under *S. bilineatum* seems to describe the head and abdomen of *deforme* Sm. and the thorax and legs of *pictum*, giving the typical *bilineatum* as a variety. It is just possible that *bilineatum* is distinct from both *madraspatanum* and *pictum*. The type was taken at Bombay.

Sphex (*Parapsammophila*) *dives* Brullé.

Ammophila dives Brullé. Exped. sc. Morée Zool. II, p. 369, 1832. ♀.

Ammophila limbata Kriechb. Verh. zool. bot. Ges. Wien XIX, p. 597, 1869. ♀ ♂.

Var. *Ammophila festiva* Sm. Cat. Hym. B. M. IV, p. 211, 1856. ♀.

Ammophila nigritaria Walk. List of Hymen. in Egypt, p. 18, 1871. ♀♂.

Hab. Rohtak, Punjab, August 6, 1909, (*G. R. Dutt*).

Also from S.-E. Europe, N. Africa and Arabia. The red colour on the abdomen is more extensive in the Indian specimen than in any other that I have seen, but there is no other difference. The Indian form is *A. elegans* Sm.

Sphex (*Psammophila*) *tydei* Guill.

Hab. Karachi ; Multan, (*G. R. Dutt*), April.

This wide ranging species extends into N.-W. India. I think it will prove to be the species described by Bingham as *Ammophila læta*. The type of *læta* is said to be in the British Museum, but is not marked, though there is a specimen of *tydei* from Chaman, the type locality, named by Bingham himself.

Cerceris rejecta sp. n.

♀. Nigra ; mandibulis, apice excepto, clypeo, fronte subantennis, orbitis internis externisque latissime, supra interruptis, fronte fascia mediana longitudinali, vertice macula obliqua utrinque, prothorace, tegulis, mesopleuris maculis magnis duabus, scutello, postscutello, segmento mediano macula magna utrinque, segmentis dorsalibus 1—5 fascia lata interrupta, ventralibus primo secundoque macula magna mediana, tertio fascia interrupta, mesosternoque fascia longitudinali utrinque flavis ; pedibus ferrugineis flavo-variegatis ;

segmenti mediani area basali macula parva utrinque, abdomine, hic illic nigro intaminato, antennisque ferrugineis ; alis pallide flavo-brunneis, apice infuscatis ; clypeo brevi, apice late emarginato, porrecto ; mesopleuris minutissime tuberculatis ; segmento mediano area basali nitida, lateribus crasse punctata ; segmento ventrali secundo area basali elevata nulla.

Long. 15 mm.

♀. Clypeus short and broad, porrect and very widely emarginate at the apex. Frontal carina strongly raised ; the antennæ inserted three times as far from the anterior ocellus as from the base of the clypeus ; cheeks as broad as eyes, without a spine. The whole insect punctured, more coarsely on the vertex and mesopleuræ than elsewhere, most closely on the dorsal surface of the abdomen ; pygidial area coarsely granulate, twice as long as broad, the sides almost parallel, very broadly rounded at the apex ; ventral segments shining, very sparsely punctured, the second segment without a raised basal area. The tubercle on the mesopleuræ is very small and is situated very near the mesosternum. Petiole of the second cubital cell very short, scarcely more than one-third as high as the second cubital cell. Mandibles with a large tooth on the inner margin.

Hab. Chapra, Bihar, (*Mackenzie*).

The form of the clypeus somewhat resembles that of *C. orientalis* Sm. but is much less strongly emarginate than in that species and the lamina is not free or nearly so strongly porrect.

Cerceris renominata nom. nov.

Cerceris opulenta Turn. Journ. Bombay Nat. Hist. Soc. XXI, p. 809, 1912. (nec Morice, Trans. Ent. Soc. London, p. 82, 1911.)

The name *opulenta* having been used by Morice for a variety of *C. dacica*, it is necessary to rename my species.

Philanthus sumptuosus sp. n.

♀. Nigra ; mandibulis, apice excepto, clypeo, fronte sub antennis, macula bilobata inter antennas, scapo subtus, tegulis, postscutello fascia angusta subinterrupta, segmentis dorsalibus 2—5, ventralibus 3—5 fascia angusta, interrupta, apicali, tibiisque antice flavis ; flagello subtus, segmentis abdominalibus duobus basalibus, tarsisque ferrugineis ; alis hyalinis, venis testaceis.

♂. Feminæ similis, fronte dimidio inferiore, genis, pronoto fascia, callis humeralibus, mesopleuris maculis duabus, segmento dorsali primo macula

utrinque, secundo macula maxima utrinque, 3—6 fascia continua apicali, femoribus apice, tibiis tarsisque flavis ; flagello articulis 5—7 omnino rufo-flavidulis, 1—4 flavis supra nigro-lineatis. Variat scutello flavo.

Long. ♀, 11—12 mm. ; ♂, 10—11 mm.

♀. Clypeus very broadly rounded at the apex, without teeth, shining, with a few scattered and very shallow punctures. Eyes emarginate, reaching to the base of the mandibles, separated on the vertex by a distance about equal to the length of the four basal joints of the flagellum. Antennæ inserted a little further from each other than from the eyes, the second joint of the flagellum nearly twice as long as the third, and more than three times as long as its apical breadth. Head and thorax finely and closely punctured, the punctures larger and sparser on the disc of the mesonotum, very sparse on the scutellum ; median segment closely punctured, with a shallow longitudinal sulcus. Basal dorsal segment a little narrower than the second, finely and sparsely punctured, the remaining segments almost smooth, the sixth segment broadly rounded at the apex. Basal joint of the fore tarsi with five spines, excluding a very short spine near the base. Cubitus of the hindwing interstitial with the transverse median nervure.

♂. Somewhat more finely punctured than the female ; the seventh dorsal segment narrowly rounded at the apex.

Hab. Pusa, Bihar, (*G. R. Dutt*), March and April. 6 ♀♀, 3♂♂.

This is very near *ordinarius* Bingh., but in that species the antennæ are stouter and shorter, the second joint of the flagellum being scarcely more than twice as long as its apical breadth, the sixth dorsal segment is narrowly emarginate at the apex and the two basal abdominal segments are broadly black at the apex. *P. scrutator* Nurse and *P. avidus* Bingh. are also related, though not quite as closely.

Bembex persimilis sp. n.

♂. Niger ; labro, clypeo, mandibulis, apice excepto, scapo, flagello subtus, orbitis latis anticis et posticis, fronte parte inferiore, pronoto, callis humeralibus, mesonoto lateribus, strigis duabus discoidalibus, et maculis duabus parvis apicalibus, mesopleuris, scutello fascia angusta apicali et lateribus, postscutello fascia apicali, segmento mediano fascia mediana curvata, postice emarginata, lateribusque, segmentis dorsalibus 1—7 fascia latissima, segmentis 1—3 vel antice emarginata, vel bisinuata, vel maculis duabus nigris includente,

segmentis ventralibus fere omnino, pedibusque flavidulis; metatarso antico dilatato, extus lobulis nigris prædito; alis hyalinis, venis testaceis.

Long. 14 mm.

♂. Eyes diverging very slightly towards the clypeus, almost parallel; front between the antennæ distinctly carinate. Seventh, eighth and ninth joints of the flagellum feebly prominent beneath, but without distinct spines, apical joint slightly curved and rounded at the apex. Basal joint of the fore tarsi dilated, with four black lobes on the outer margin, a close row of many fine spine-like hairs along the outer margin, but no definite spines except the two at the apex. Spine of the fore tibiæ with a translucent rounded lobe. Fore femora unarmed, intermediate femora rather feebly serrate beneath. Basal joint of the intermediate tarsi somewhat broadened and flattened at the apex; intermediate tibiæ slightly produced at the apex. Second and sixth ventral segments each with an elevated longitudinal tubercle, seventh with a longitudinal median carina. Seventh dorsal segment very broadly rounded at the apex, coarsely and sparsely punctured. Hindwings with only one vein springing from the apex of the median cell.

Hab. Akalgarh, Punjab, (*G. R. Dutt*), March.

Closely allied to the Algerian *B. barbara* Handl., but differs in the much more extensive pale markings, in the presence of many fine setæ instead of a few long spines on the basal joint of the fore tarsi, in the very distinct serration of the intermediate femora and in the absence of lateral carinæ on the seventh ventral segment. The colour in the two specimens before me is reddish, evidently affected by cyanide, I have therefore assumed that the normal colouring is yellowish.

Bembex relegatus sp. n.

♂. Niger; mandibulis, apice excepto, labro, clypeo, orbitis anticis et posticis latis, fronte fascia longitudinali et fascia transversa ante ocellos, scapo subtus, prothorace, thorace subtus, pleuris, mesonoto lateribus et strigis duabus longitudinalibus apice fascia transversa conjunctis, scutello postscutelloque fasciis apicalibus, segmento mediano fascia curvata, segmentis dorsalibus 1—6 fascia lata, 1—3 macula nigra utrinque includente, segmentis ventralibus 1—4, segmento ventrali quinto fascia emarginata, sexto macula utrinque, pedibusque flavidulis; alis hyalinis, venis testaceis.

Long. 12 mm.

♂. Eyes almost parallel ; front between the antennæ with a distinct, but not strongly raised, carina ; antennæ normal as far as the sixth joint of the flagellum, the remaining joints missing ; anterior legs normal, the basal joint of the fore tarsi with six spines ; intermediate femora serrate beneath on the apical half ; intermediate tibiæ and tarsi normal. Second ventral segment with a low longitudinal carina not reaching the base or apex and not produced into a tubercle ; sixth ventral segment with a low triangular tubercle at the apex ; seventh with three longitudinal carinæ. Seventh dorsal segment broad, narrowly truncate at the apex, very sparsely punctured on the apical half. Genital stipes narrow, rounded at the apex. Only one vein springing from the apex of the median cell of the hindwing.

Hab. Multan, Punjab, (*G. R. Dutt*), April.

Superficially this resembles *B. radoszkowskyi* Handl., but may be distinguished by the very different armature of the ventral segments. Both species belong to the group of *B. oculata* Latr.

The female, which was taken in the same month by Mr. Dutt at Lahore, is coloured as in the male, but with the spots on dorsal segments 2—3 not wholly enclosed by the yellow band, and the sixth dorsal segment is almost entirely yellow, narrowly subtruncate at the apex. The second ventral segment is sparsely punctured in the middle.

Bembex oculata Latr.

Bembex oculata Latr. Hist. Nat. Crust. et Insect, XIII, p. 302. 1805.

Hab. Karachi, (*E. Comber*), September and October ; Nasik, (*E. Comber*).

This wide ranging Palæarctic species must be included in the Indian fauna.

Stizus erythrogaster sp. n.

♂. Niger ; abdomine rufo-ferrugineo, segmentis duobus apicalibus infuscatis ; scapo apice extremo, flagello articulo ultimo apice, tegulisque fuscis ; alis fuscis, anticis apice, extra cellula radiali, hyalinis.

Long. 13 mm.

♂. Eyes strongly convergent towards the clypeus, which is strongly convex and almost transverse at the apex. Antennæ inserted about twice as far from the anterior ocellus as from the base of the clypeus, second joint of the flagellum as long as the third and fourth combined, slender ; the apical joints gradually increasing in thickness, joints 8—10 broader than long ; apical

joint shorter than the penultimate, slightly curved and truncate at the apex. Head sparsely and shallowly punctured, a distinct longitudinal carina between the antennæ, the front covered with silver pubescence. Thorax strongly rugosely punctured, the same sculpture extending to the median segment and pleuræ. Abdomen elongate, finely and closely punctured, more coarsely on the three apical segments than at the base; seventh dorsal segment a little produced at the apex and narrowly truncate. The hyaline margin of the forewing reaches to the apex of the radial cell and very nearly touches the third transverse cubital nervure, narrowing rapidly beyond the cubitus. Anal cell of hindwing extending far beyond the origin of the cubitus.

Hab. Chapra, Bihar, (*Mackenzie*).

This is a slender species closely allied to *conscriptus* Nurse in sculpture and colour, but the forewing has the apex hyaline as in *blandinus* Sm., which is a more robust and less coarsely sculptured species. The clypeus in the present species is less distinctly emarginate than in *conscriptus*, and in that species the seventh dorsal segment is rounded and not produced at the apex. Both belong to the group of *tridentatus* Fabr.

Stizus proximus Handl.

Stizus proximus Handl. Sitzungsber. Akad. Wiss. Wien. CI, p. 45, 1892. ♂♀.

A single female taken by Mr. Fletcher at Kalyana Pandal, Anamalais, S. India, 3,000 feet, in January. There are specimens in the British Museum from the Cocos Islands.

Arpactus (*Hoplisoides*) *remotus* sp. n.

♀. Nigra; clypeo, orbitis anticis late, pronoto margine, callis humeralibus, scutello fascia transversa, segmento dorsali primo fascia apicali interrupta, secundo, quarto quintoque fascia apicali, segmentoque ventrali secundo fascia lata apicali flavis; mandibulis basi, macula sub alis, segmento dorsali primo, pedibusque ferrugineis; tarsis intermediis flavo-maculatis; alis hyalinis, venis fusco-ferrugineis, area radiali infuscata.

Long. 7 mm.

♀. Eyes only slightly convergent towards the clypeus; antennæ short, distinctly thickened towards the apex. Head finely and rather sparsely punctured; mesonotum and scutellum very closely and deeply punctured, the punctures very large; pleuræ coarsely, but less closely punctured; the

longitudinal and transverse carinæ of the mesosternum well developed. Median segment with the enclosed basal area well defined and marked with about ten longitudinal carinæ, the rest of the segment rugosely punctured. Abdomen strongly, but not very closely punctured ; the first segment narrowed to the base, but no longer than the second, only half as broad at the apex as the second segment ; sixth dorsal segment coarsely rugose. Spines of the tibiæ small and delicate, anterior tarsi not ciliated. Cubitus of the hindwing originating at the apex of the anal cell.

Hab. Jummoo, Punjab, (*G. R. Dutt*), May.

Easily distinguished from other Indian species of the subgenus *Hoplisoides* by the much coarser sculpture. The Indian species of *Hoplisoides* already recorded are *pictus* Sm., *fœx* Handl., *capitatus* Nurse and *intrudens* Nurse.

Arpactus (*Dienoplus*) *vividus*, sp. n.

♂. Niger ; prothorace, mesothorace, scutello, postscutelloque rufo-ferrugineis ; mandibulis, antennis, tegulis, pedibusque ferrugineis ; clypeo, orbitis anticis late, segmentoque dorsali secundo macula apicali utrinque flavis ; alis hyalinis, iridescentibus, venis ferrugineis.

Long. 5 mm.

♂. Eyes very slightly convergent towards the clypeus ; head shining, minutely and sparsely punctured. Thorax shining, with a few fine scattered punctures, the groove at the base of the scutellum crenulate. Median segment with the basal area well defined and coarsely longitudinally striated ; the remainder of the segment coarsely, but irregularly obliquely striated. First dorsal segment short and broad, smooth and shining ; second finely and sparsely punctured ; the remaining segments closely and minutely punctured. The mesopleuræ are distinctly but sparsely punctured.

Hab. Lahore, Punjab, (*G. R. Dutt*), April.

This is very distinct both in colour and sculpture from *ornatus* Sm., the only other Indian species belonging to the subgenus. The same differences divide it from all other species of the subgenus occurring in the Palæarctic region, the sculpture of the median segment being much coarser than in any of them.

This subgenus was formerly known as *Arpactus* but Jurine's name *Arpactus* with *A. mystaceus* L. for the type appears to have priority over *Gorytes* Latr. which applies to the same group. *Arpactus* therefore should be used for the genus, and cannot apply to the present subgenus, which does not

include *mystaceus*. *Dicnoplus* Fox appears to be the name which must be used for the subgenus.

Alyson annulipes Cam.

Alyson annulipes Cam. Mem. Manchester Lit. & Phil. Soc. XLI, No. 13, p. 21. 1897. ♂.

Cameron's description applies to the male, though he states that he is describing a female. That sex, however, has the scutellum, median segment and the basal half of the first abdominal segment ferruginous. This species is not identical with *Alyson ruficolle* Cam. from Ceylon.

Hab. Pusa, Bihar, (*G. R. Dutt*), April and May; Panch Mahals, (*E. Comber*), August; Poona, (*R. Wroughton*).

Nysson dubitatus Turn.

Nysson dubitatus Turn. Ann. & Mag. Nat. Hist. (8) XIV, p. 255, 1914. ♀.

Described from Coimbatore specimens, taken in July. A single male from Pusa, taken in March, is similar to the female, but has the apical margins of ventral segments 2—5 with a fringe of long fulvous hairs in the middle; the sixth dorsal segment has a tooth on each side near the apical angles; the seventh is truncate at the apex, with a short blunt tooth on each side at the apical angles. In these points it comes very near the male of *basalis* Sm., from which it differs in the colour of the basal abdominal segment and of the ventral fringes; the seventh dorsal segment is transverse between the apical teeth in *dubitatus*, but bluntly produced in *basalis*. Both species belong to the group of *N. scalaris* Illig., to which *N. decoratus* Turn. from Coimbatore also belongs. In all these species the anal cell of the hindwing is short, terminating far before the origin of the cubital nervure.

Nysson dutti, sp. n.

♂. Niger; mandibulis basi, clypeo, scapo subtus, flagelli articulo basali macula apicali subtus, pronoto fascia interrupta, callis humeralibus, scutello linea basali, segmentisque dorsalibus tribus basalibus macula transversa apicali utrinque flavis; tegulis testaceis; abdomine segmento primo, segmento ventrali secundo, pedibusque ferrugineis; alis hyalinis, venis testaceis.

Long. 4 mm.

♂. Apical joint of the flagellum slightly curved, longer than joints ten and eleven combined, but shorter than those joints combined with the ninth; all

the joints, except the apical and the second, much broader than long. Front between the antennæ concave, not carinate, just below the base of the antennæ the front terminates in a short bilobed process which is raised above the base of the clypeus. Head finely and closely punctured, clothed with yellowish grey pubescence ; no marginal carina behind the eyes. Mesonotum and scutellum more strongly punctured than the head ; propleuræ finely striated, mesopleuræ coarsely rugose ; postscutellum coarsely longitudinally striated ; enclosed area of the median segment coarsely striated, the striæ not reaching the apex, the spines at the apical angles acute, but not very long. Abdomen finely punctured, the punctures becoming finer and closer on the apical segments ; second ventral segment rounded at the base, shining and strongly punctured ; seventh dorsal segment with a spine on each side at the apical angles, the margin between the spines transverse. Hind tibiæ smooth, the legs more or less marked with yellow. Anal cell of the hindwing terminating just beyond the origin of the cubital nervure. There is no fringe of hairs on the ventral abdominal segments.

Hab. Chapra, Bihar, (*Mackenzie*). One male.

Closely allied to the European *N. variabilis* Chevr., but differs in the shorter, stouter, antennæ ; in the yellow clypeus, and in some other details of colour. I do not think it can be the male of *N. horni* Strand, which that author compares with *variabilis*, on account of the much smaller size, the different colour of the clypeus, legs and nervures and the finer puncturation of the head.

Entomognathus nanus Cam.

Crabro nanus Cam. Mem. Manchester Lit. & Phil. Soc. (4) III, p. 274, 1890.

This species has the mandibles excised and the eyes hairy, and is in all respects a true *Entomognathus*.

Hab. Chapra, Bihar, (*Mackenzie*).

Entomognathus chapraensis, sp. n.

♀. Nigra ; mandibulis basi, scapo, pronoto margine postico, callis humeralibus, tegulis, postscutelloque flavis ; pedibus pallide ferrugineis flavo-variegatis ; alis hyalinis, venis testaceis ; thorace crasse punctato.

Long. 5 mm.

♀. Clypeus subporrect and narrowly emarginate at the apex, with two small teeth on each side close to the apical angles ; mandibles deeply excised

on the outer margin. Eyes separated at the base of the clypeus by a distance scarcely exceeding half the length of the scape, the facets no larger in front than at the sides, very slightly hairy. Head finely and not very closely punctured, the front and clypeus clothed with silver pubescence, a longitudinal groove from the anterior ocellus reaching the concave portion of the front; posterior ocelli further from each other than from the eyes, the space between them and the eyes smooth and shining, with a narrow oblique groove almost reaching the eyes. Mesonotum and scutellum very coarsely punctured, mesopleuræ punctured-rugose and thinly clothed with delicate silver pubescence. Enclosed area of the median segment obliquely striated, the striæ rather low and far apart, the enclosing carinæ strong, the space between them and the lateral carinæ of the dorsal surface almost smooth, with a few indistinct striæ. Abdomen shining, microscopically punctured, subsessile; sixth dorsal segment broadly triangular. Recurrent nervure received close to the middle of the cubital cell, transverse cubital nervure joining the radial cell just before two-thirds from the base, the radial cell broadly truncate at the apex.

Hab. Chapra, Bihar, (*Mackenzie*).

Easily distinguished from *nanus* by the larger size, and much coarser sculpture of the thorax.

Entomognathus isolatus, sp. n.

♀. Nigra, nitida; mandibulis basi, scapo, pronoto margine postico, callis humeralibus, scutello postscutelloque flavis, pedibus flavis, coxis femoribusque intermediis et posticis infuscatis; tegulis testaceis; alis hyalinis, venis testaceis.

Long. 3 mm.

♀. Mandibles deeply excised on the outer margin near the base, acute at the apex; clypeus short and broad, not carinate or toothed, transverse at the apex. Antennæ inserted further from each other than from the eyes; front smooth and shining, vertex finely and sparsely punctured. Eyes separated at the base of the clypeus by a distance equal to about three-quarters of the length of the scape, not hairy, the facets in front very large; posterior ocelli half as far again from each other as from the eyes, the space round each ocellus broadly depressed, a narrow, impressed, oblique line from each posterior ocellus to the eye, a distinct depression between the posterior ocelli. Thorax much narrower than the head, the pronotum rounded at the sides; mesonotum subopaque, very finely, but not closely, punctured, the parapsidal furrows

shallow but distinct. Enclosed area of the median segment finely obliquely striated, the apical slope with a deep median sulcus, smooth in the middle, very finely punctured on the sides; the pleuræ almost smooth. Abdomen minutely punctured; sixth dorsal segment triangular, flat; the first segment subsessile. Hind tibiæ with a row of spines. Radial cell rather narrowly truncate at the apex, the transverse cubital nervure received at about one-third from the base; recurrent nervure received much before the middle of the cubital cell.

Hab. Pusa, Bihar, (*T. V. Rama Krishna*), June. 1♀.

This is not a typical *Entomognathus*, the eyes being without hairs and the facets very large in front, resembling *Crossocerus* rather than the groups allied to *Lindenius*. But the mandibles being simple at the apex, and excised on the outer margin, it must, I think, be placed in *Entomognathus*, in spite of the differences in the eyes and neuration. In general facies it closely resembles *Lindenius saundersi* Kohl, an Algerian species, from which it differs in the excision of the mandibles, the position of the recurrent nervure, and the greater size of the facets of the eyes in front.

Rhopalum iridescens, sp. n.

♂. Niger; scapo subtus, callis humeralibus, tarsisque anticis et intermediis, apice infuscatis, coxisque apice, albis; alis hyalinis, splendide iridescentibus, venis nigris.

Long. 5—6 mm.

♂. Clypeus short and broad, the apical margin transverse, clothed with silver pubescence. Antennæ inserted nearer to the eyes than to each other, eyes separated at the base of the clypeus by a distance equal to the length of the scape; a groove running from the anterior ocellus towards the base of the clypeus. Ocelli in an equilateral triangle, the posterior pair much nearer to each other than to the eyes, but a little nearer to the eyes than to the posterior margin of the head. Subopaque on the head and thorax, shining on the median segment and abdomen, without visible punctures, the mesopleuræ sparsely clothed with white pubescence; median segment without a distinctly enclosed area, but with a triangular space at the base more shining than the rest of the segment and divided by a shallow longitudinal sulcus, which is continued more distinctly on the apical slope. Petiole long and very slender, a little swollen at the apex, as long as the hind femur and trochanter combined. Hind tibiæ rather strongly swollen on the apical half. Radial

cell rather broadly truncate at the apex, receiving the transverse cubital nervure before one-third from the base: the recurrent nervure received close to the middle of the cubital cell.

Hab. Gulmarg, Kashmir, (*Col. F. W. Thomson*).

This is quite distinct from *elongatus* Dudgeon, having the front broader and the colour different, the wings also much more highly iridescent. It does not answer to the descriptions of either *petiolatus* Nurse or *aswad* Nurse, both of which seem to belong to *Rhopalum*, but which have no white markings.

Dasyproctus funestus sp. n.

♂. Niger; scapo subtus, pronoto linea utrinque, callis humeralibus, segmento dorsali secundo macula parva utrinque, segmento quinto fascia utrinque, femoribus anticis intermediisque extremo apice, tibiis anticis intermediisque supra, tarsisque anticis intermediisque basi flavis; antennis pedibusque fuscis; alis hyalinis, iridescentibus, venis fuscis.

Long. 5—6 mm.

♂. Clypeus covered with silver pubescence, with a low longitudinal carina, the apical margin slightly produced in the middle. Eyes with much larger facets in front than elsewhere, separated from each other at the base of the clypeus by a distance not quite equal to half the length of the scape; the antennæ inserted nearer to the eyes than to each other. Posterior ocelli far apart, but nearly as far from the eyes as from each other, and distinctly nearer to each other than to the posterior margin of the head. Opaque and smooth, a transverse crenulated groove at the base of the scutellum, a vertical crenulated groove on the mesopleuræ below the tegulæ; the postscutellum longitudinally rugose; the dorsal surface of the median segment coarsely rugose, with short longitudinal striæ at the base, the sides of the segment more shining than the rest of the insect and very finely and indistinctly striolate. Petiole as long as the hind femur and trochanter combined, distinctly, but not very strongly, swollen at the apex, second segment very narrow at the base, broadened strongly to the apex. Transverse cubital nervure received just before the middle of the radial cell, which is obliquely truncate at the apex; recurrent nervure received at about two-thirds from the base of the cubital cell.

Hab. Pusa, Bihar; March.

"With dead Acalyptrate flies in the stem of *Dicliptera* sp."

This is a smaller species than *orientalis* Cam., and may be distinguished from all other Indian species of the group known to me by the more sombre colouring and by the much coarser sculpture of the median segment.

Crabro (*Clytochrysus*) *sexcinctus* Fabr.

This common European species occurs in the mountains on the North-West frontier of India, differing from West European specimens in the yellow colour of the scutellum in the female, but not otherwise. Specimens from Gulmarg, Kashmir, have the abdominal fasciæ interrupted, but in a specimen from Hazara only the fascia of the third segment is interrupted.

Hab. Europe and Western Asia. Hazara District, Dungagali, 8,000 ft., May 21—24, (*T. Bainbrigge Fletcher*); Gulmarg, Kashmir, (*Col. F. W. Thomson*).

Crabro (*Clytochrysus*) *violaceipennis* Cam. from Sikkim is very near this species, but in addition to colour differences the sculpture of the basal area of the median segment is different, the striation in the female being more strongly defined in *violaceipennis*.

Oxybelus nigritulus sp. n.

♀. Nigra ; pronoto linea utrinque, callis humeralibus, lamellis postscutelli, segmento dorsali primo macula transversa utrinque, secundoque macula minuta utrinque flavis ; scutello postscutelloque linea obliqua apicali utrinque pallide flavidula ; tibiis anticis extus fusco-ferrugineis ; tarsis articulo apicali testaceis ; alis hyalinis, venis ferrugineis ; tegulis testaceis.

♂. Feminæ similis ; flagello subtus in medio, tarsisque anticis sordide ferrugineis, tibiis anticis extus, intermediis posticisque basi, femoribus anticis intermediisque subtus, segmentis dorsalibus secundo tertioque macula transversa utrinque, quartoque macula minutissima utrinque flavis.

Long. ♀, 7 mm. ; ♂, 6 mm.

♀. Clypeus flattened, not convex, the anterior margin transverse and smooth ; head closely and very distinctly punctured ; eyes separated on the front by a distance equal to about two-and-a-half times the length of the scape, the space between and above the base of the antennæ shining and almost smooth ; posterior ocelli almost three times as far from each other as from the eyes ; thorax rather strongly punctured, mesopleuræ rugose ; scutellum more sparsely punctured, with a median carina, which is continued on the post-scutellum ; lamellæ of the postscutellum rather small, rounded on the outer, straight on the inner side ; mucro of the median segment narrow, three times

as long as the greatest breadth, concave, emarginate at the apex ; the surface of the median segment obliquely striated at the base, transversely at the apex, with the usual triangular area and marginal carinæ, the sides of the segment longitudinally striated. Abdomen closely and finely punctured, the sixth dorsal segment more coarsely punctured and very narrowly truncate at the apex ; the three basal segments distinctly depressed at the apex ; ventral surface shining, sparsely punctured.

♂. Clypeus broadly emarginate at the apex, produced into a spine in the middle of the emargination, the lateral angles of which are produced into very short and blunt spines. Front rather narrower than in the female. Seventh dorsal segment rather broadly truncate at the apex.

Hab. Shillong, Assam, 5,000—6,000 ft., April to June, (*Turner*).

This may be distinguished from other Indian species by the black legs of the female and by the form of the clypeus. It is allied to the European *O. nigripes* Oliv., but differs in the female in the clypeus and in the narrower pygidial area. It may prove to be only a geographical race of *nigripes*, the differences in the male being very slight.

Oxybelus agilis Sm.

Oxybelus agilis Sm. Cat. Hym. B. M., IV, p. 387, 1856. ♂.

Oxybelus sabulosus Sm. Cat. Hym. B. M., IV, p. 388, 1856.♀.

These are undoubtedly sexes of one species, differing much in the form of the clypeus, as is often the case in this genus ; the mucro is also broader in the female.

The species is nearly allied to the European *O. trispinosus* Fabr., but not identical.

Oxybelus pictiscutis Cam.

Oxybelus pictiscutis Cam. Journ. Bombay Nat. Hist. Soc., XVIII, p. 302, 1908.

This seems to be one of the commonest species of the genus in Northern India and the Punjab. Like *agilis* it belongs to the group of *trispinosus* ; but may be distinguished from *agilis* by the large yellow spots on the scutellum, and on the middle of the postscutellum. I consider that *O. aurifrons* Cam. (Journ. Bombay Nat. Hist. Soc., 1902) is the male of this species, but the name cannot stand, having been used by Smith in 1856 for a Brazilian species.

Oxybelus furcifer sp. n.

♀. Nigra ; mandibulis basi, scapo, flagello articulo primo, pronoto margine postico, tegulis, scutello macula magna utrinque, postscutello, lamellis, segmentis dorsalibus 1—4 fascia transversa utrinque, femoribus apice, tibiis tarsisque flavis ; tibiis posticis apice nigro-maculatis ; segmento mediano basi acute bispinoso ; alis hyalinis, venis testaceis.

♂. Feminæ similis ; segmento dorsali quinto utrinque flavo-fasciato ; segmentis quarto quintoque angulis apicalibus spina brevi armatis.

Long. ♀♂, 4—5 mm.

♀. Mandibles long and slender ; clypeus convex, but not distinctly carinate, the apical margin transverse, slightly depressed and shining, a low tubercle in the middle before the margin. Front about twice as broad as the length of the scape and first joint of the flagellum combined ; posterior ocelli separated from each other by a distance about three times as great as that separating them from the eyes ; scutellum with a median carina, rather strongly punctured ; postscutellar laminæ as broad as long, strongly rounded on the outer side. Two acute and moderately long spines spring from the base of the median segment ; the vertical surface of the segment is obliquely striated at the base, transversely at the apex, with the usual marginal carinæ and triangular enclosed space. Abdomen finely punctured ; the sixth dorsal segment very narrowly rounded at the apex. Mesonotum and pleuræ closely and finely punctured, the sides of the median segment longitudinally striated at the base, almost smooth at the apex.

♂. Clypeus rather strongly bisinuate at the apex ; the striation of the median segment coarser than in the female ; the fourth and fifth abdominal segments armed with a small spine on each side at the apical angles ; seventh dorsal segment shallowly emarginate at the apex.

Hab. Chapra, (*Mackenzie*) ; Pusa, (*G. R. Dutt*), July.

Easily distinguished from other Indian species of the genus by the two spines of the median segment which replace the usual mucro.

Oxybelus transiens sp. n.

♀. Nigra ; mandibulis, apice excepto, antennis, clypeo, tibiis, femoribus anticis intermediisque, femoribus posticis apice, pygidioque apice ferrugineis ; pronoto, tegulis, scutello postice nigro-marginato, postscutelli lamellis,

segmentis dorsalibus 1—5 fascia transversa apicali utrinque, coxis, trochanteribus tarsisque flavis ; alis hyalinis, venis fusco-ferrugineis.

Long. 4—5 mm.

♀. Clypeus without a carina, the apical margin almost transverse. Eyes diverging both towards the clypeus and the vertex, rather further from each other at the base of the clypeus than on the vertex. Head finely punctured, the front clothed with pale golden pubescence. Thorax very closely and rather finely punctured ; scutellum almost smooth, with a median carina on the apical half, the narrow black hind margin slightly depressed and coarsely punctured ; postscutellar laminæ rather short, with an incurved spine at the apex ; mucro lamellar, short, as broad at the apex as long, broader at the apex than at the base, the apex widely emarginate, smooth. Posterior slope of the median segment finely transversely striated, with the usual marginal carinæ and triangular enclosed space, the sides of the segment finely striated. Abdomen finely and closely punctured ; the apical segment more coarsely punctured and clothed with stiff golden setæ, very narrowly rounded at the apex.

Hab. Chapra, Bihar, (*Mackenzie*).

Although the mucro is broad and only slightly recurved at the sides, I do not look on this species as belonging to the subgenus *Notoglossa*.

Oxybelus (*Notoglossa*) *lamellatus* Oliv.

Oxybelus lamellatus Oliv. Encycl. method. Insect, VIII, p. 593, 1811.

Oxybelus arabs Lep. Hist. Nat. Insect. Hymen. III, p. 212, 1845. ♀.

Oxybelus forticarinatus Cam. Journ. Bombay Nat. Hist. Soc., XVIII, p. 304, 1908.

Hab. Gujranwala, Punjab, (*G. R. Dutt*), April ; Pusa, (*G. R. Dutt*), July ; Chapra, (*Mackenzie*).

The extent of the markings on the abdomen is very variable. I doubt if *O. squamosus* Sm. is distinct from this species, but have not seen the type. Specimens from Ceylon have the second dorsal segment more finely punctured than in *arabs*, and probably form a subspecies, to which perhaps the name *squamosus* may apply, but I think as the type was from Barrackpore it is more likely to be identical with Pusa specimens. The species belongs to the subgenus *Notoglossa* Dahlb., and ranges as far west as Gibraltar and Mogador.

Oxybelus (*Notoglossa*) *linguifera* sp. n.

♀. Nigra, aureo-sericea ; mandibulis basi, pronoto linea utrinque, callis humeralibus, tegulis, postscutello, segmentisque dorsalibus 1—4 macula transversa utrinque flavis ; clypeo apice, antennis, pedibusque ferrugineis ; alis hyalinis, venis testaceis ; mucrone magna, linguiforme, apice acuta.

Long. 5 mm.

♀. Clypeus transverse at the apex, with a strong carina from the base not reaching the apex. Head and thorax evenly and very distinctly punctured, each puncture bearing a very short golden hair. Eyes separated on the front by a distance about equal to three times the length of the scape ; posterior ocelli far apart, four times as far from each other as from the eyes. Mesopleuræ very coarsely punctured ; scutellum with a median carina ; lamellæ of the post-scutellum small and narrow, pointed. Mucro large, linguiform, about twice as long as the greatest breadth, narrowed to the apex and pointed, with a median carina and fine transverse striæ, the margins distinctly raised. Median segment longitudinally striated on the sides, obliquely and irregularly at the base of the vertical portion, transversely at the apex, the enclosed area somewhat cordiform in shape. Abdomen finely and closely punctured, the apical segment very broadly triangular, feebly emarginate at the apex, the extreme apex ferruginous ; ventral segments finely and rather closely punctured.

Hab. Gujranwala, Punjab, (*G. R. Dutt*), April.

Easily distinguished from the two other Indian species of the subgenus *Notoglossa*, (*lamellatus* Oliv. and *robustus* Cam.), by the pointed mucro, which is not emarginate as in the other species.

Dimorpha (olim *Astata*) *maculifrons* Cam.

Astata maculifrons Cam. Mem. Manchester Lit. & Phil. Soc. (4) II, p. 149, 1889. ♂.

Astatus interstitialis Cam. Journ. Bombay Nat. Hist. Soc., XVII, p. 1010, 1907. ♀.

Dimorpha (olim *Astata*) *fletcheri*, sp. nov.

♀. Nigra ; abdomine rufo-ferrugineo ; scapo apice, mandibulis, apice excepto, tibiis anticis, tarsisque anticis ferrugineis, tibiis tarsisque intermediis et posticis fusco-ferrugineis ; alis hyalinis, venis testaceis, stigmate brunneo-testaceo.

Long. 7 mm.

♀. Head shining, sparsely punctured, the vertex almost smooth, the front sparsely clothed with long grey pubescence. Antennæ stout, the third joint of the flagellum a little longer than the second. Mesonotum sparsely punctured and clothed with long grey hairs anteriorly, the posterior half and the scutellum smooth and shining; mesopleuræ closely punctured. Median segment strongly longitudinally striated, the apical slope coarsely transversely striate-rugose, the sides of the segment smooth at the base, irregularly striated at the apex. Sixth dorsal segment narrowly triangular; the sides raised, forming marginal carinæ. Abdomen smooth and shining. Radial cell short, broadly truncate at the apex, a little shorter on the costa than the combined length of the second and third abscissæ of the radius; the third cubital cell longer on the radius than on the cubitus, third abscissa of the radius as long as the first and second combined. The cubital margin of the second cubital cell receives the recurrent nervures at one-third and two-thirds from the base.

Hab. Pusa, Bihar, (*G. R. Dutt*), March; Chapra, Bihar, (*Mackenzie*); Nagpur.

A specimen taken by Mr. Fletcher at Ootacamund, 7,500 feet, in December, has the radial cell very slightly shorter, but does not seem to differ otherwise. The species seems to be very near *A. quettæ* Nurse, but that species is entirely smooth and shining, except on the median segment, and has the front strongly convex. The sculpture of the median segment differs much from *lubricatus* Nurse. *Astatus* Latr., corrected by him to *Astata*, was published in 1796 without any species, the name being used by Panzer in 1801 in *Tenthredinidæ*, and Jurine's name *Dimorpha* was published with *boops* as the type before Latreille assigned any species to *Astata*. So that *Dimorpha* must stand, quite independently of any question as to the validity of the publication of the Erlangen list (*vide* Morice and Durrant, Trans. Ent. Soc., London, p. 395, 1915).

Palarus indicus Nurse.

Palarus indicus Nurse. Journ. Bombay Nat. Hist. Soc., XV, p. 4, 1903.
Hab. Pusa, April; Deesa (*Nurse*).

Palarus funerarius Moraw.

Palarus funerarius Moraw. Hor. Soc. ent. Ross, XXIII, p. 136, 1889.
Palarus quiescens Nurse. Journ. Bombay Nat. Hist. Soc., XV, p. 5, 1903.
Hab. Lyallpur, Punjab, (*G. R. Dutt*), August.
Originally described from Mongolia.

Dinetus cereolus Morice subsp. *politus* subsp. nov.

♀. Differs from the typical Egyptian form in the much more shining surface, especially on the head and the median segment ; in the almost obsolete striation of the middle of the dorsal surface of the median segment, the striation being much more distinct in the type ; in the more extended black area on the median segment ; in the lesser extent of the yellow area on the front, which in *cereolus* reaches the anterior ocellus, but does not extend nearly so high in the present form ; and in the black occiput, the yellow band behind the eyes being continued across the occiput in the type, but not in the present form. The colour in the Indian form is reddish testaceous, but this is probably due to cyanide.

Hab. Chapra, Bihar, (*Mackenzie*).

The typical form was taken at Cairo. The genus has not been previously recorded from India.

Larra simillima Sm.

Larra simillima Sm. Cat. Hym. B. M., IV, p. 275, 1856. ♀.

Larra fuscipennis Cam. Mem. Manchester Lit. and Phil. Soc. (4) II, p. 126, 1889. ♂.

I look on these as only sexes of one species. Bingham's key is misleading, the transverse ridge on the front being distinct in the female as well as in the male. The pronotum is very much longer in the female, showing a distinct dorsal surface, not sunk below the level of the mesonotum as in the male. A series of males from Chapra in the Pusa collection show every gradation in the colour of the three basal abdominal segments from almost entirely red to entirely black. The species is very closely allied to the European *L. anathema* Rossi, which it replaces in India, also to the Chinese *L. similis* Mocs. and to the Japanese *L. simplipennis* Sm.

Hab. Chapra ; Pusa ; Tirhut.

Notogonia nigrita Lep.

Tachytes nigrita Lep. Hist. Nat. Insect. Hymen., III, p. 241, 1845. ♀.♂.

Hab. Multan, Punjab, (*G. R. Dutt*), April.

This common Mediterranean species has not previously been recorded from India.

Notogonia nigra v. d. Lind.

Larra pompiliformis Panz. Fauna Insect. German, IX, 106, 1809 (nec Panz. 89, 1805).

Tachytes nigra v. d. Lind. Nouv. Mem. Acad. Sci. Bruxelles, V, p. 23, 1829.

Larrada agilis Sm. Cat. Hym. B. M., IV, p. 284, 1856. ♀.

Larra nigriventris Cam. Mem. Manchester Lit. & Phil. Soc. (4) II, p. 127, 1889. ♀.

Larra nana Bingh. Fauna British India, Hymen., I, p. 200, 1897. ♀.

Larra iridipennis Cam. Ann. & Mag. Nat. Hist. (7) V, p. 26, 1900. ♀.

I do not think that these can be divided, even subspecifically. Very closely allied are *N. vigilans* Sm. from China, and *N. obliquetruncata* Turn. and *N. recondita* Turn. from Australia The latter is probably a subspecies.

Hab. Central and South Europe; North Africa (*pompiliformis*); Gambia (*agilis*); Cape Verde Islands; N. Nigeria; Nyasaland; N.-E. Rhodesia; Madagascar (*agilis*); Chapra, Bihar; Khasi Hills (*nigriventris*); Tenasserim (*nana*).

Not previously recorded from India under Panzer's name.

Notogonia reticulata Cam.

Laptolarra reticulata Cam. Ann. & Mag. Nat. Hist. (7) V, p. 31, 1900.

Hab. Barrackpore; Chapra; Matheran.

This is a subspecies of *N. nigricans* Walk. which is Egyptian, but the mesonotum is more finely punctured in reticulata.

Parapiagetia erythropoda Cam.

Tachytes erythropoda Cam. Mem. Manchester Lit. and Phil. Soc. (4) II, p. 135, 1889. ♀.

This is not a *Tachytes* but a *Parapiagetia.* Cameron's description is quite sufficient, and there is also a female from Deesa in the British Museum identified by him. Males in the Pusa collection from Rohtak, Punjab, and Pusa closely resemble *P. wickwari* Turn. from Ceylon, differing only in the distinctly shorter and broader petiole. But a female from Ceylon has the first abdominal segment shorter and less distinctly petiolate than in North Indian specimens and also has the femora black, except at the apex. A

specimen of the male in the Pusa collection from Samalkote, Madras, is identical with Ceylon specimens. On the whole I am inclined to regard *wickwari* as a subspecies only. The tarsi of the female are short, but the fifth joint is unusually long, exceeding the length of the basal joint, and the tarsal ungues are long. The spines of the fore tarsi are very short, the hind tibiæ have a row of strong spines.

Tachysphex substriatulus sp. n.

♀. Nigra ; mandibulis, apice excepto, scape apice, tegulis, femoribus apice, tibiis tarsisque ferrugineis ; segmentis abdominalibus margine apicali anguste decoloratis ; alis hyalinis, venis pallide ferrugineis.

Long. 5·5 mm.

♀. Clypeus very narrowly transversely depressed at the apex, thinly clothed with delicate silver pubescence which extends on to the front. Head subopaque, not punctured, smooth, with an obscure depressed line from the base of the clypeus to the anterior ocellus. Ocellar prominence not divided by a sulcus, entire ; above it is an oblique impressed line on each side, continued posteriorly from the junction on to the vertex. Antennæ rather stout, the second and third joints of the flagellum subequal, but short ; eyes separated on the vertex by a distance nearly equal to the combined length of the four basal joints of the flagellum. Pronotum very steeply sloped ; mesonotum shining, almost smooth ; scutellum smooth ; mesopleuræ minutely punctured, with a very deep vertical groove anteriorly. Median segment very delicately transversely striolate on the dorsal surface and on the posterior slope. Abdomen almost smooth, longer than the thorax and median segment combined ; pygidial area elongate triangular, finely and sparsely punctured. Comb of the fore tarsi almost absent, with a few very short and feeble spines. Radial cell rather narrowly truncate at the apex, extending as far as the apex of the third cubital cell ; second and third abscissæ of the radius subequal, the fourth nearly as long as the three first combined. The space between the recurrent nervures on the cubitus is less than the second abscissa of the radius.

Hab. Lahore, Punjab, (*G. R. Dutt*), April.

This is near *inventus* Nurse in colour, but differs in the sculpture of the median segment, and in the absence of a sulcus on the ocellar prominence.

Tachysphex sericea Sm.

Larrada sericea Sm. Cat. Hym. B. M., IV, p. 285, 1856. ♀.

Lyrops fluctuata Gerst. Monatsber. Akad. Wiss. Berlin, p. 510, 1857. ♀.

Tachysphex selectus Nurse. Journ. Bombay Nat. Hist. Soc., XIX, p. 514, 1909. ♂.

Tachysphex ferrugineipes Cam. Sjöstedt, Kilimandjaro-Meru Exp. II, p. 289, 1910.

Cameron is possibly correct in identifying this species as *Tachytes ferrugineipes* Lep., which name has priority over Smith's ; but the original description leaves much doubt.

Hab. Gambia ; Angola ; Pakasa, N. Rhodesia ; Dunbrody, Cape Colony ; Chapra, Bihar ; Biskra, Algeria ; Albania ; Corfu.

The species identified by Smith as *ferrugineipes* Lep. is a *Notogonia*, which is more probably correct. *T. sericea* has not been previously recorded from India, except under Nurse's name.

Tachysphex bengalensis Cam.

Tachysphex bengalensis Cam. Mem. Manchester Lit. & Phil. Soc. (4) II, p. 144, 1889. ♀.

Bingham's specimen from Amherst, Tenasserim, from which apparently the description in the *Fauna of India* was taken, is different to specimens from Pusa, these having the fourth joint of the tarsi much broader than long, thus closely resembling *brevitarsis* Kohl., from which they differ in the colour of the nervures and the more distant and coarser puncturation of the mesonotum.

Tachysphex syriacus Kohl.

Tachysphex syriacus Kohl. Verh. zool.-bot. Ges. Wien, XXXVIII, p. 146, 1888. ♂.

Tachysphex peculator Nurse. Journ. Bombay Nat. Hist. Soc., XIX, p. 515, 1909. ♂.

Hab. Deesa, (*Nurse*), November ; Karachi, (*Comber*), October.

Ranges over the Southern Mediterranean region, and also through tropical Africa from the Gambia to Mozambique.

Tachysphex lilliputianus sp. n.

♂. Niger, minutus, sparse albopilosus ; segmento mediano brevissimo, longitudinaliter rugoso-striato ; segmentis dorsalibus 1—3 fascia angusta apicali albopilosa ; alis hyalinis, iridescentibus, venis fuscis.

Long. 3·5 mm.

♂. Clypeus almost transverse at the apex, punctured at the base, narrowly depressed and shining. Second joint of the flagellum distinctly shorter than the third, only about half as long again as the first. Eyes separated on the vertex by a distance equal to the length of the three basal joints of the flagellum. Head and thorax very finely and closely punctured, thorax short; median segment a little shorter than the mesonotum, twice as broad as long, very broadly rounded posteriorly the dorsal surface rather finely and irregularly longitudinally striate, the posterior slope vertical and transversely striated, the sides of the segment finely obliquely striated. Abdomen very finely and closely punctured, the apical margin of the segments almost smooth. Tarsi rather slender, anterior femora strongly emarginate at the base. Radial cell short, obliquely and broadly truncate at the apex. Fourth abscissa of the radius no longer than the third, and about equal to the first, the second very short; third cubital cell broad, not produced on the cubitus, scarcely more than half as long on the cubitus as the second; first recurrent nervure received very near the base of the second cubital cell, second close to the middle. Tegulæ brown.

Hab. Pusa, Bihar, (*G. R. Dutt*), March.

This belongs to the group of the Spanish *T. brevipennis* Mercet, but is very much smaller, the median segment is shorter, the radial cell shorter and more broadly truncate, and the third cubital cell much broader on the radius and less produced on the cubitus. *T. instructus* Nurse (= *T. striolatus* Cam. 1908, nec. 1903) belongs to the same group, but has the median segment longer.

Tachysphex latissimus sp. n.

♀. Nigra, mandibulis, clypeo, scapo, tegulis, scutello, segmento mediano, segmento abdominali primo, segmento sexto, segmentis ventralibus in medio infuscatis, mesosterno, pedibusque ferrugineis; segmentis dorsalibus 1—5 apice late pallide decoloratis; alis hyalinis, venis testaceis.

♂. Feminæ similis; scutello, segmento mediano, mesosternoque nigris.

Long. ♀, 10 mm.; ♂, 7 mm.

♀. Clypeus at the base and front covered with silver pubescence, the apical margin of the clypeus transverse, shining and broadly depressed. Second and third joints of the flagellum subequal, each more than twice as long as the first. Eyes separated on the vertex by a distance equal to the combined length of the second and third joints of the flagellum. Head and thorax opaque, minutely and very closely punctured; median segment finely granulate,

with a depressed median line. Fore tarsi with a long comb, the basal joint with eight spines, the two apical spines feebly spatulate. Abdomen almost smooth, the punctures microscopic ; the apical margins of the dorsal segments shallowly and very broadly depressed. Pygidial area shining, with scattered minute punctures, elongate triangular, the margins not strongly raised. Pubescence of the thorax greyish and rather dense, especially on the median segment. Radial cell broadly obliquely truncate at the apex, not reaching nearly so far as the apex of the third cubital cell ; first and second abscissæ of the radius subequal, the third distinctly shorter, the fourth as long as the second and third combined ; the recurrent nervures separated on the cubitus by a distance almost as great as the length of the second abscissa of the radius.

♂. Femora very distinctly excised near the base ; eighth ventral segment shallowly emarginate at the apex, with a short spine on each side at the apical angles ; second abscissa of the radius shorter than the third.

Hab. Pusa, Bihar, (*G. R. Dutt*), May.

The male has very fine and sparse pubescence on the abdomen, especially on the sides, but not forming apical fasciæ. The eyes in this species are very far apart on the vertex, as in *gujaraticus* Nurse, but the pubescence of the thorax and median segment is much shorter in that species and the sculpture of the median segment quite different.

Tachytes proxima Nurse.

Tachytes proxima Nurse. Ann. & Mag. Nat. Hist. (7) XI, p. 514, 1903. ♀.

According to my determination this beautiful species occurs at Pusa and Chapra. It seems to differ from *T. taprobanæ* Cam. only in the narrow and elongate pygidial area, which in *taprobanæ* is broadly triangular. The male has the golden pile much paler than in the female ; the seventh dorsal segment is narrowly rounded at the apex ; the seventh ventral segment semicircularly emarginate at the apex, leaving a stout tooth on each side at the apical angles.

Tachytes brevipennis Cam.

Tachytes brevipennis Cam. Ann. & Mag. Nat. Hist. (7) V, p. 22, 1900. ♀.

In fresh specimens the pubescence on the pygidium is bright golden ; not mixed with black, as in Cameron's description and in a specimen marked by him as type in the British Museum, which is evidently discoloured.

Hab. Chapra, Bihar (*Mackenzie*).

Tachytes comberi sp. n.

♀. Nigra ; clypeo, fronte, pedibusque argento-sericeis ; segmentis dorsalibus 1—4 apice utrinque fascia albosericea ; area pygidiali rugosa, haud sericea ; tarsis articulo apicali basi fusco-ferrugineo ; spinis tarsorum brunneis ; alis hyalinis, venis ferrugineis ; tegulis pallidis.

♂. Feminæ similis ; segmento dorsali septimo albosericeo.

Long. ♀, 19 mm. ; ♂, 13 mm.

♀. Clypeus very broadly rounded at the apex, with a small tubercle on each side a little nearer to the middle than to the base of the mandibles, the apical margin narrowly depressed and opaque, the base very finely and closely punctured. Second joint of the flagellum distinctly longer than the third ; eyes separated on the vertex by a distance equal to the combined length of the first and second joints of the flagellum. Anterior ocellus round, the space about the posterior ocelli shallowly depressed ; vertex opaque, almost smooth. Thorax very closely and minutely punctured, still more finely on the pleuræ than on the dorsulum ; median segment minutely granulate on the dorsal surface ; the posterior slope transversely striated, with a deep median sulcus which extends on to the apex of the dorsal surface ; the sides of the segment closely and finely vertically striated. Abdomen smooth and shining, the apical margins of the segments broadly and shallowly depressed ; pygidial area elongate triangular, very narrowly rounded at the apex, strongly rugose at the base, more finely at the apex, without pubescence. Basal joint of the fore tarsi with seven stout spines ; the longer spur of the hind tibiæ fully as long as the basal joint of the hind tarsus. Radial cell narrowly rounded at the apex ; second and third abscissæ of the radius subequal, shorter than the first ; the distance between the recurrent nervures on the cubitus less than the second abscissa of the radius.

♂. The minute tubercles on the apical margin of the clypeus obsolete ; seventh dorsal segment clothed with silver pubescence, rather broadly rounded at the apex ; eighth ventral segment with a tooth on each side at the apical margin, depressed and emarginate between the teeth. Apical joint of the flagellum broadly obliquely truncate at the apex.

Hab. Karachi, (*E. Comber*), October.

This fine species is remarkable for the bare pygidial area of the female. In structure it is somewhat allied to the European *T. etrusca*, but differs much in colour, and in the antennæ of the male.

Tachytes celsissimus sp. n.

♀. Nigra ; pallide flavidulo-pubescente ; segmentis dorsalibus 1—4 apice albido-pubescentibus ; pygidio aureo-setoso ; unguiculis spinisque ferrugineis ; alis pallide flavo-hyalinis, venis testaceis.

♂. Feminæ similis ; thorace fulvo-piloso ; pygidio argenteo-pubescente.

Long. ♀, ♂, 14 mm.

♀. Clypeus closely and minutely punctured, with a deflexed triangular space at the apex. Second joint of the flagellum distinctly longer than the third ; eyes separated on the vertex by a distance about equal to the length of the second joint of the flagellum. Front slightly convex below the anterior ocellus, and covered with pale yellowish pubescence which extends on to the clypeus. Thorax closely and minutely punctured and densely clothed with pale yellowish pubescence, which also covers the median segment ; the latter short and broad, much shorter than the mesonotum, with a fovea at the apex, which is continued as a median sulcus on the posterior slope. Abdomen subopaque, very finely aciculate ; the ventral surface shining, smooth at the base of the segments, minutely punctured at the apex. Pygidial area very broad, narrowly rounded at the apex. Basal joint of the anterior tarsi with five rather feeble spines ; the longer spine of the hind tibiæ a little shorter than the basal joint of the hind tarsi. Radial cell narrowly rounded at the apex ; second abscissa of the radius shorter than the third ; distance between the recurrent nervures on the cubitus a little greater than the second abscissa of the radius, but less than the third.

♂. Similar to the female ; but the pubescence on the thorax is bright fulvous, the middle joints of the flagellum are very feebly arcuate beneath, the seventh dorsal segment very broad, broadly subtruncate at the apex, and clothed with silver pubescence ; eighth ventral segment broad, very shallowly subemarginate at the apex, without spines.

Hab. Shillong, Khasi Hills, 6,000 feet, (*Turner*), September.

This resembles a small specimen of *T. sinensis* Sm., but has the pygidial area much broader, the median segment shorter, one spine less on the basal joint of the fore tarsi, and the eyes further apart on the vertex in both sexes. The seventh dorsal segment of the male is much broader at the apex than in *sinensis*, closely resembling that of *T. saundersi* Bingh., but that species has the eighth ventral segment more deeply emarginate and with strong teeth at the apical angles, and is different in the colour of the pubescence and the lesser

distance between the eyes on the vertex. The species does not agree with any of the species described by Cameron from the Khasi Hills.

Trypoxylon nodosicornis sp. n.

♂. Niger; mandibulis fusco-ferrugineis; femoribus anticis supra, tibiis anticis supra nigrolineatis, femoribusque intermediis extremo apice, ferrugineis; tarsis anticis omnino, intermediisque basi pallide luteis; tegulis testaceis; alis hyalinis, iridescentibus, venis nigris; flagello articulo quinto infra excavato, sexto infra tuberculo magno triangulari.

Long. 9 mm.

♂. Clypeus clothed with silver pubescence, truncate at the apex, with two minute teeth in the middle of the apical margin; eyes separated at the base of the clypeus by a distance equal to the combined length of the scape and the first joint of the flagellum, the distance between the eyes on the vertex slightly greater. Posterior ocelli twice as far from each other as from the eyes, separated from the eyes by a distance scarcely greater than half their own diameter. Front rather strongly convex, with a distinct median depression from the anterior ocellus nearly reaching the base of the antennæ; no carina between the antennæ. Second joint of the flagellum shorter than the first; joints 2—4 broader than long; fifth joint longer, very deeply emarginate beneath; sixth joint with a large triangular tubercle beneath; joints 7—9 a little longer than broad, the three apical joints longer and stout, the apical joint conical, no longer than the penultimate. Opaque, microscopically punctured; the abdomen shining, median segment subopaque, with delicate and very short striæ at the extreme base and a deep median groove from base to apex, with shallow lateral grooves enclosing a basal area, the posterior slope concave. First abdominal segment twice as long as the second, slightly swollen at the apex, the extreme apex a little constricted. Sides of the median segment smooth and shining; a deep fovea on the mesopleuræ.

Hab. Dungagali, Hazara District, 8,000 feet, May, (*T. Bainbrigge Fletcher*).

Easily distinguished by the remarkable antennæ. I do not think that this can be the male of *T. simlaense* Cam., to which it seems most nearly related.

APPENDIX

Containing two Descriptions

BY

G. R. DUTT, B.A.,

Entomological Assistant, Pusa.

Gorytes ornatus Sm. ♀.

Head smooth, shining, almost impunctate, a longitudinal impressed line running from the anterior ocellus to the extremity of the frons, inner orbits of the eyes nearly parallel; clypeus convex, widely emarginate in the middle; antennæ short, inserted just above the base of the clypeus, scape more or less conical. Pro- and meso-thorax very lightly and sparsely punctured, median segment with a medial longitudinal furrow and two lateral convergent light furrows (rather depressions) enclosing a triangular area at the base of the segment, this triangular area and the lateral depressions obliquely striate; a medially transversely striate furrow continued down from the apex of the enclosed area to the apex of the segment. Abdomen almost fusiform, lightly punctured, punctures on the second segment sparse, closer on the third and fourth segments. Legs of moderate length, anterior tarsi ciliated. Black; the clypeus and the face for nearly three-fourths of its length along the inner orbits of the eyes covered with thick white glittering pile, the sides of the median segment and the base of the basal abdominal segment with erect white pubescence; thorax from above and the tarsi ferruginous, the clypeus, face along the inner orbits of the eyes for three-quarters of its length, scape of the antennæ from below, apical half of the anterior and intermediate femora from below and the basal half of the posterior tibiæ from above, two semi-circular marks touching each other at a point in the middle of the apical margin of the basal abdominal segment, a wide bisinuate transverse band on the apical margin of the second segment, apical half of the fifth segment, yellowish white. Wings light fusco-hyaline, radial and cubital cells shaded with fuscous clouds, nervures and tegulæ testaceous.

♂. Similar, differs in having the vertex behind the ocelli, the mandibles and the legs (excepting the posterior pair which are shaded black), ferruginous. There is an entire absence of the semicircular marks on the basal segment.

Hab. Bihar, Pusa (*G. R. Dutt*).

,, Chapra (*Mackenzie*).

♀. Length 6 mm. Wing expanse 11 mm.

♂. Slightly smaller.

(♀. Described from a single specimen.)

Solierella turneri n. sp.

Head, thorax, and abdomen very finely and closely punctured, median segment coarsely reticulate, clypeus bearing a strong carina, antennæ short, inserted just above the base of the clypeus, eyes slightly converging towards the vertex; pronotum narrow transverse, scutellum prominent, median segment truncate posteriorly, with a central fovea at the verge of truncation above, the face of the truncation is transversely striated and bears a medial longitudinal furrow; abdomen long, a little longer than the thorax, the basal segment slightly concave, the base of the second and third segments slightly constricted. Black; the clypeus, face, and cheeks posteriorly covered with silvery glittering pile, a medially interrupted transverse band on the posterior margin of the pronotum, the tegulæ excepting a central brownish mark, tubercles, a transverse line on the postscutellum, the intermediate and the posterior tibiæ and tarsi (excepting a few black marks on them), and a mark on the anterior femora and tibiæ, yellow; the anterior tarsi slightly brownish.

Hab. Bihar, Pusa (*G. R. Dutt*).

Length 3·5 mm. Wing expanse 5·5 mm.

(Described from a single specimen which is the type.)

[Very near the European *S. compedita*, Picc., but the sculpture of the median segment is very different.—R.E.T.]

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